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ABSTRACT

This learning activity package (LAP) titled Occupational Cluster Analysis for Disadvantaged Vocational Learners is one of a series designed to develop competencies needed by vocational teachers working with disadvantaged students. Each LAP concentrates on one general vocational teacher competency and contains the following sections: an introduction, a teacher competency sheet, an information section, worksheets, and evaluation devices. The introduction describes the purpose and directions for using the booklet. The teacher competency sheet identifies the unit, competency, performance objective, learning activities and vocabulary to guide the learning of the vocational teacher. Information sheets and alternative print and nonprint media present content pertaining to the competency. A test is provided to check the teacher's comprehension of the information presented. Worksheets provide application of the content and a final evaluation instrument permits an assessment of the vocational teacher's performance. (LRA)

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OCCUPATIONAL CLUSTER ANALYSIS

FOR DISADVANTAGED VOCATIONAL LEARNERS

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This publication has been reviewed in compliance with Title IX of the Educational Amendments of 1972 and Public Law 94-482, Title II of the Vocational Education Amendments of 1976 for the elimination of sex bias, sex discrimination, and sex-role stereotyping.

PREFACE

This booklet is one of a series designed to assist vocational educators with disadvantaged learners. The series was designed to develop competencies needed by vocational teachers working with disadvantaged students.

Each booklet is a learning activity package (LAP) that concentrates on one general vocational teacher competency. An introduction, a teacher competency sheet, an information section, worksheets and evaluation devices are included. The introduction describes the purpose and directions for using the booklet. The teacher competency sheet identifies the unit, competency, performance objective, learning activities and vocabulary to guide the learning of the vocational teacher. Information sheets and alternative print and nonprint media present content pertaining to the competency. A test is provided to check the teacher's comprehension of the information presented. Worksheets provide application of the content and a final evaluation instrument permits an assessment of the vocational teacher's performance. With certain LAPs, extended activities have been included to permit interested teachers to go beyond the minimum competency level.

The LAPs in the series are as follows:

1. Characteristics of Disadvantaged Learners
2. Disadvantaged Learner Referral Process
3. Diagnostic Assessment of Disadvantaged Vocational Learners
4. Disadvantaged Learner Analysis Profile
5. Occupational Cluster Analysis for Disadvantaged Vocational Learners
6. School and Community Resources for Disadvantaged Learners
* 7. Instructional Materials for Disadvantaged Learners
* 8. Learning Activities for Disadvantaged Learners
* 9. Disadvantaged Learner Vocational Plan
* 10. Classroom Management for Disadvantaged Learners
* 11. Disadvantaged Vocational Learner Progress Evaluation
* 12. Competency-Based Vocational Teacher Education on Disadvantaged Learners: User's Manual

* Booklets 7-12 are under development and are projected to be ready for dissemination in October 1980.

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Perry R. Gemmill
Project Director

INTRODUCTION

Vocational education for disadvantaged youth requires two types of analyses: learner analysis and occupational analysis. Learner analysis was discussed in the unit, Assessing Disadvantaged Learners. Occupational analysis is the topic of this learning activity package (LAP).

Instruction in vocational programs should prepare disadvantaged learners to gain employment and progress within a chosen occupational cluster. The content should be performance-based. In other words, instruction should be based on the basic competencies needed by effective employees of related occupations in industry, business and/or labor.

The purpose of this LAP is to (a) describe the process of conducting an occupational cluster analysis, (b) guide the analysis of an occupational cluster, (c) describe the technique for conducting a detailed task analysis and (d) facilitate the detailed analysis of instructional tasks.

A suggested procedure for using this LAP is to review the entire Teacher Competency Sheet. If you then feel that you need additional information about performing an occupational cluster analysis for a disadvantaged learner, perform the learning activities starting with the information section. However, if you think that you can achieve the performance objective, complete the worksheets and rate your performance.

Five extended activities have been provided. These experiences will enable you to detail tasks to the level at which disadvantaged learners can be successful. Instruction is provided so you can identify the specific vocational and academic requirements needed for task performance.

TEACHER COMPETENCY SHEET

UNIT 2.00:

Analyzing Vocational Content for Disadvantaged Learners

COMPETENCY 2.01:

Analyze an occupational cluster for a vocational area.

PERFORMANCE OBJECTIVE:

Given information on analyzing occupational clusters, perform an occupational cluster analysis for a vocational area. A checklist will be used to rate your performance. All items must receive an acceptable rating.

LEARNING ACTIVITIES:

1. Read Information Section I, "Conducting an Occupational Cluster Analysis."

2. (Optional) Examine references located in the Reference Section of the User's Manual on analyzing occupations to determine course content.

3. View sound filmstrip, "Planning Vocational Education, Part I," and complete the reaction sheet.

4. Test Your Knowledge by completing the section on "Conducting an Occupational Cluster Analysis."

5. Develop an inventory of common (core) tasks for your vocational area using Worksheet I, "Occupational Cluster Analysis Inventory."

6. Describe the behaviors of effective employees while performing a common occupational task on Worksheet II, "Task Requirements."

7. Rate Your Performance by completing the "Occupational Cluster Analysis Checklist."

EXTENDED ACTIVITIES:

1. Read Extended Information Section I, "Conducting a Detailed Task Analysis."

2. Develop a detailed analysis of an occupational task on Worksheet III, "Multilevel Element Inventory."

3. Read Extended Supplementary Section I, "Criteria for Developing a Task Analysis Profile."

4. Describe in detail an occupational task on Worksheet IV, "Task Analysis Profile."

5. Rate Your Performance on the "Detailed Task Analysis Checklist."

VOCABULARY:

Common Task: Tasks that are performed by effective workers in two or more related occupations. (Also called core instructional tasks.)

Detailed Task Analysis: The process of breaking down and describing specific behaviors of occupational tasks to accommodate academic deficiencies of learners.

Element: A discrete unit of skill, knowledge or attitude composing a task. (Also called a step.)

Multilevel Element Inventory: A tool to determine various levels of task sub-elements for meeting a learner's level of instruction.

Occupation: The composite of tasks or activities performed by an employee in a business, profession or trade, especially to earn a living.

Occupational Cluster: A group or listing of occupations within a vocational area that share common experiences, knowledge and skill requirements, such as manufacturing occupations and construction occupations.

Occupational Cluster Analysis: The identification of subclusters, occupations, tasks and elements for a group of closely related occupations.

Task: A discrete unit of work performed by an individual in an occupation. (Also called a competency, skill or operation.)

Task Analysis Profile: A tool for recording specific cognitive, affective and psychomotor behaviors required of effective employees in performing an occupational task.

Task Inventory: A listing of tasks that are performed by effective workers who are employed in a specific occupation.

Task Requirements: The psychomotor, cognitive and affective behaviors a student must possess to perform a task or competency.

Information Section I

CONDUCTING AN OCCUPATIONAL CLUSTER ANALYSIS

Vocational education can prepare disadvantaged youth for employment and promotion or transfer to other occupations by training students in broad occupational clusters. For each occupational cluster, there are common tasks that are performed by the incumbent workers or employees. Students who master these common tasks will have the core skills needed for entry into two or more occupations. The learning of specific tasks and/or higher level skills will permit employment in selected occupations.

The United States Office of Education has identified fifteen major cluster areas. These clusters are as follows:

1. Agriculture/Agri-Business
2. Natural Resources and Environment
3. Construction
4. Manufacturing
5. Transportation
6. Communications and Media
7. Product Services, Mechanics/Repairers
8. Marketing and Distribution
9. Business and Office
10. Personal Services
11. Hospitality and Recreation
12. Consumer and Home Economics
13. Health
14. Public Service
15. Marine Science

State, regional and local education agencies may identify cluster areas based on their labor market needs. At this writing, broad vocational cluster areas had not formally been identified in the State of Maryland. Local school districts may, however, find clustering a useful technique for analyzing occupations and selecting course content.

Occupational Cluster Analysis

Vocational instruction in broad occupational areas requires an occupational cluster analysis to be performed. A flow chart of the steps involved is shown in Figure 1.

A cluster analysis suitable for identifying disadvantaged learner vocational content involves the following steps:

1. Identification of an occupational cluster and/or sub-cluster(s).

2. Identification of specific occupations.

3. Development of an occupational hierarchy.

4. Selection of occupations for disadvantaged learners.

5. Construction and verification of task inventories.

6. Selection of core and specific instructional tasks.

7. Description of the task requirements (i.e., behaviors required within the instructional tasks).

The vocational teacher should consider the extent of specificity desired when identifying an occupational cluster. An exploratory vocational program would permit a broad cluster area; whereas, a preparatory program would be more limited in scope. Figure 2 shows selected clusters and subclusters common to vocational education. A cluster area may be more suitable for occupational exploration, while a subcluster might be more suitable for occupational preparation.

Specific occupations within a given cluster or subcluster should then be identified. These occupations may be cited through occupational surveys of local employers, research of current occupational references and/or interviews with local advisory committees and other industry/business/labor representatives. Figure 3 identifies specific occupations listed in the Dictionary of Occupational Titles (DOT) for two subclusters within the construction cluster.

The third step in performing an occupational cluster analysis is to establish a hierarchy of the occupations identified. A chart should assist visualizing the levels of and relationships between the various occupations. An occupational hierarchy is shown for a cluster area in Figure 4a and for subcluster areas in Figure 4b and 4c.

A fourth step is to identify occupations that are suitable for disadvantaged learners. Priority must be given to those occupations in which the disadvantaged learner can be employed and successful. Desirable occupations are those that

(a) require entry level skills,
(b) require second level skills,
(c) require transferrable skills,
(d) are needed in the job market,
(e) have favorable employment outlook,
(f) are adaptable to technological changes,
(g) have potential for mobility within industry/business/labor and
(h) permit mobility among geographic areas.

For each occupation chosen, a task inventory should be developed. A task inventory is a listing of tasks or discrete units of work that are performed by effective workers who are

employed in the specific occupation.

Each task statement starts with an active verb and is followed by a noun and possible modifier. For example:

Task statement: frame floor openings -

active verb = frame
noun = openings
modifier = floor

The tasks listed must be verified. Techniques such as surveys, literary research and interviews as noted for identifying specific occupations may be used. A detailed explanation of constructing and verifying task inventories is presented in How To Do A Job Analysis, listed in the Reference Section of the User's Manual.

After verified tasks are noted for each specific occupation, tasks that are common to the given occupations are identified. These common cluster tasks become core instructional tasks in vocational education. Figure 5 displays common cluster tasks that are core instructional tasks for selected entry occupations in the Personal Service cluster. The reader should note that the higher level occupations such as barber and cosmetologist require more of the core instructional tasks.

Instructional tasks should be selected that are appropriate for the disadvantaged learner and the occupation or occupations of possible employment. Both core instructional tasks and other specific occupational tasks are generally needed. In other words, an occupation may require tasks that are performed in other occupations as well as other tasks that are performed mainly in the specific occupation.

The last general step in the cluster analysis process is to identify the task requirements. This process involves detailing the behaviors required for each instructional task. Psychomotor, cognitive and affective behaviors that are needed by effective employees performing the task should be identified. These units of skill, knowledge or attitude are called elements or steps.

Elements are stated the same way as tasks are stated; however, an element is more specific. Examples of task detailing are shown in Figures 6a and 6b for the construction and personal services clusters respectively.

An analysis of employee or incumbent worker behaviors permits the vocational teacher to know expected student behaviors required for entrance into the occupation. These behaviors may also be determined by observing workers, interviewing workers and supervisors and reviewing literature that exists on the task requirements.

In detailing the psychomotor behavior, the steps or skills performed to accomplish the task should be stated. For cognitive behavior, the task related and basic academic knowledges needed to perform the task are specified. Whereas, for affective behavior the work habits or attitudes with which the task is performed should be cited.

Statements of basic skills, knowledges and attitudes of tasks may be kept general at this point. Specificity can be determined in the extended learning activities or when relating the task details to specific disadvantaged learner vocational and academic needs.

In conclusion, an occupational cluster analysis aids the vocational teachers of disadvantaged learners as follows:

1. Determines task content of various occupations.
2. Determines occupational levels and relationships.
3. Identifies areas of existing course content that may be kept, modified or eliminated.
4. Determines core and specific occupational tasks for training and evaluating.
5. Provides information needed for matching the learner's instructional needs with occupational requirements.
6. Provides information for counseling.

Figure 1

OCCUPATIONAL CLUSTER ANALYSIS PROCESS

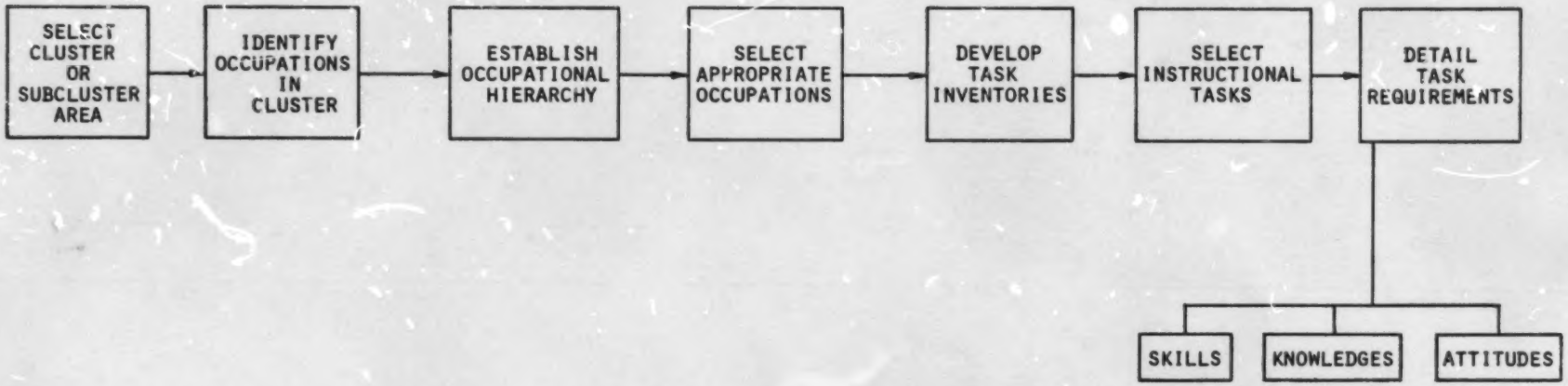

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Figure 2

Selected Common Cluster Titles and Subclusters

1. AGRICULTURE/AGRI-BUSINESS
   a. agriculture mechanics occupations
   b. ornamental horticulture occupations
   c. forestry

2. CONSTRUCTION
   a. residential construction occupations
   b. building maintenance

3. MANUFACTURING
   a. bench work occupations
   b. assembly line

4. AUTOMOTIVE AND POWER SERVICES
   a. air conditioning/refrigeration
   b. appliance repair
   c. auto mechanics
   d. auto body repair

5. CLOTHING AND TEXTILES
   a. clothing service
   b. clothing construction
   c. upholstery
   d. home furnishings

6. GRAPHICS AND COMMUNICATION MEDIA
   a. drafting
   b. offset printing
   c. screen printing
   d. bookbinding
   e. letterpress
   f. commercial photography

7. DISTRIBUTION
   a. material handling
   b. retailing

8. PERSONAL SERVICE OCCUPATIONS
   a. cosmetology
   b. food service

9. HEALTH OCCUPATIONS
   a. dental occupations
   b. environmental
   c. nursing

10. OFFICE AND BUSINESS OCCUPATIONS
   a. general office clerks
   b. office machine operators

Figure 3

Selected Occupations in the Construction Cluster

CLUSTER: CONSTRUCTION

OE PROGRAM CODE	SUBCLUSTER TITLE	D.O.T.	OCCUPATIONAL TITLES
17.1001 17.1099 17.1010 17.1004	Residential Construction	*860.381 860.781 860.887 863.884 *884.887 886.887 861.887	Carpenter Carpenter, Rough Carpenter Helper Insulation Worker Cement Mason Helper Roofer Helper Bricklayer Helper
17.10 17.11	Building Maintenance and Service	*899.381 381.887 381.887 *382.884 389.887	Maintenance Man, Building Charwomen Porter Janitor Sexton

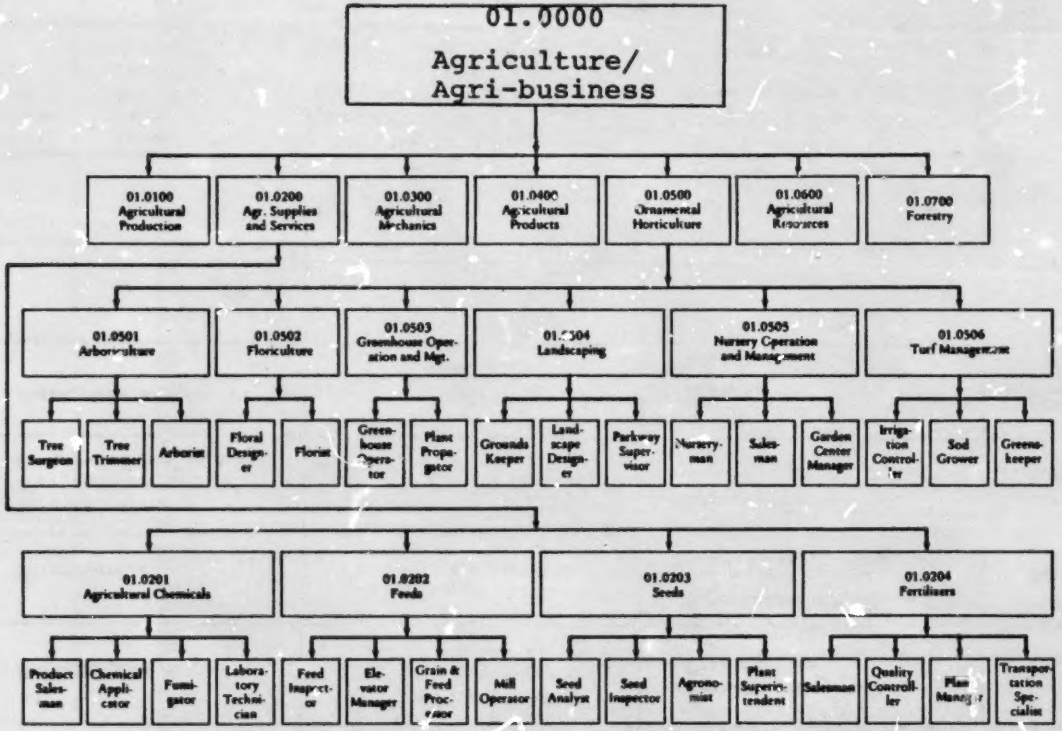
*Key Analysis Occupation

Adapted from: Central Michigan University. Cluster guide: an instructional resource guide to enhance cooperative vocational education/special education. Mt. Pleasant, Michigan: Author, 1973.

Note: This example demonstrates one way the Construction Cluster can be divided into subclusters; and it shows a sample of entry level occupations within each subcluster.

Figure 4a

Cluster Occupational Hierarchy



Source: Department of Adult, Vocational and Technical Education, Suggested guidelines for the Planning of Sequential Programs at the Secondary Level Springfield, Ill.: Illinois Office of Education, 1975.

Adapted from: Phelps, L.A. & Lutz, R.J. Career exploration and preparation for the special needs learner. Boston: Allyn and Bacon, Inc., 1977.

Note: This form represents a comprehensive occupational breakdown of career possibilities within the field of Agriculture. This type of breakdown is generally used for occupational exploration instruction.

Figure 4b

Subcluster Occupational Hierarchy

Cluster-Related Instructional Areas (Course titles and/or major instructional units)	SUBCLUSTER: (Ornamental Horticulture Occupations)			
Landscaping	*Groundskeeper*		*Landscape Gardner* *Landscape Designer*	*Landscape Architect*
Floriculture		*Flower Grower*	*Floral Designer*	*Florist*
Arboriculture	*Tree-Surgeon Helper*		*Tree-Trimming Foreman* *Tree Surgeon*	*Arborist*
Turf Management	*Greensworker*	*Greenskeeper* *Irrigation Controller*	*Superintendent, Greens* *Sod Grower* *Turf Supplies Salesman*	*Agronomist*
Nursery	*Laborer, Nursery* *Moss Handler* *Bagger-and Burlap Man*	*Salesman*	*Salesperson*	*Garden Center Manager* *Nursery Superintendent*
Greenhouse	*Greenhouse Worker*		*Salesperson*	*Greenhouse Operator/Manager*
Level:	Laborer Sorter/Packer Assistant Loader Helper Attendant Worker Tender	Operator Clerk Driver Installer Assembler Aide	Craftsman Supervisor Technician Inspector Complex Operator	Middle Manager Foreman Official

Adapted from: Phelps, L.A. Instructional development for special needs learners: an in-service resource guide. Urbana-Champaign, Illinois: University of Illinois, Department of Vocational and Technical Education, 1975.

Note: This form represents a more specific breakdown of occupations within a cluster area. This type of breakdown is generally used for occupational instruction.

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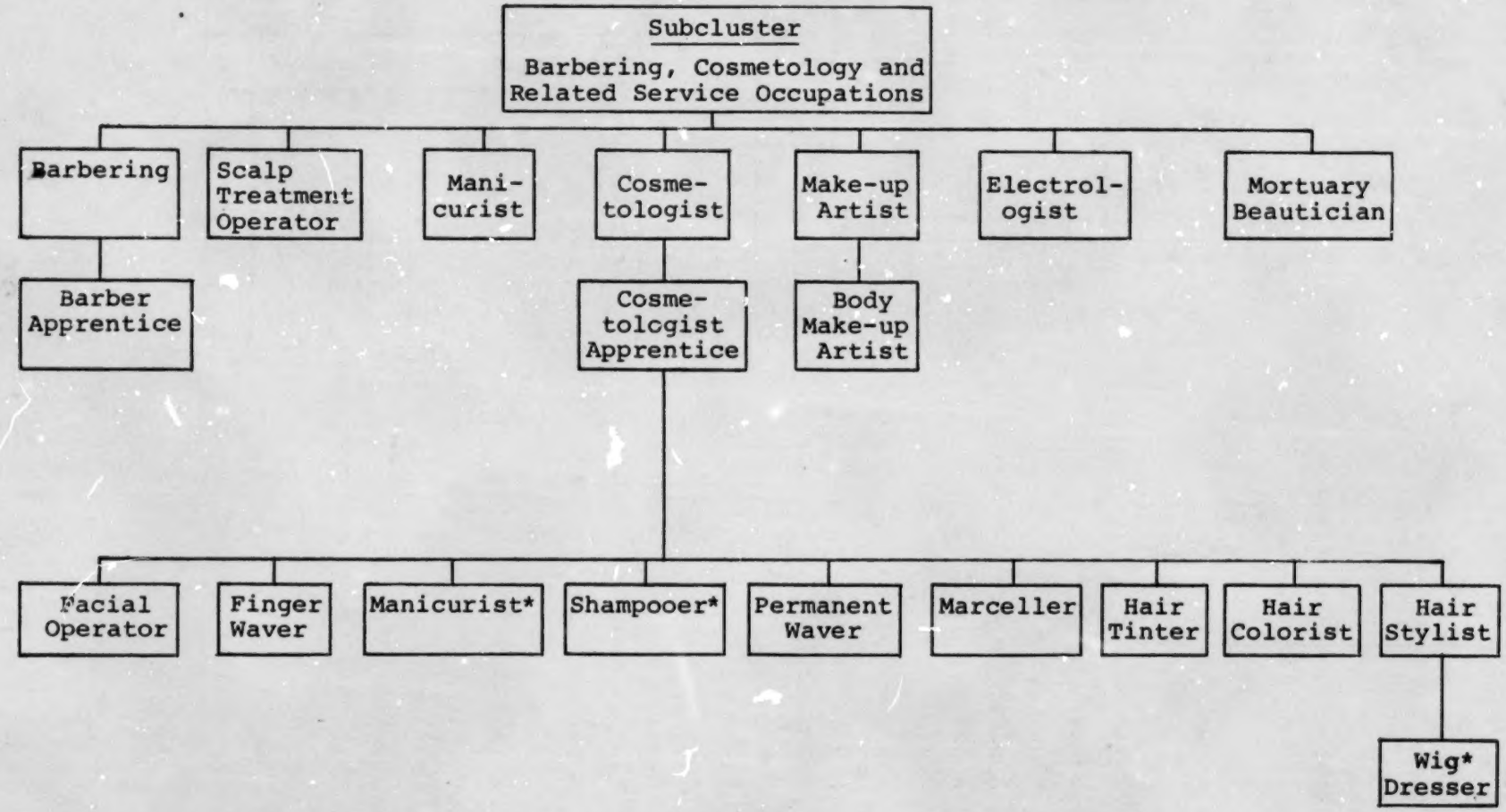
Figure 4c
Subcluster Occupational Hierarchy

CLUSTER: PERSONAL SERVICES
DOT: 330, 331, 332, 333, 3339



*Possible para-cosmetologist jobs that would not require satisfactory achievement on the State Board of Cosmetology Examination.

Figure 5

Common (Core) Cluster Tasks

Cluster: Personal Service

Subcluster: Barbering, Cosmetology and related services

COMMON TASKS	OCCUPATIONS	Barber	Scalp Treatment Operator	Cosmetologist	Make-up Artist	Electrologist	Mortuary Beautician	Manicurist
1.0	Cuts hair	x		x		x	x	
2.0	Blow styles hair	x		x			x	
3.0	Applies hair dressings	x	x	x				
4.0	Applies hair dyes	x		x				
5.0	Styles hair	x		x			x	
6.0	Massages face	x		x				
7.0	Analyzes hair	x	x	x		x	x	
8.0	Shampoos hair	x	x	x		x	x	
9.0	Massages scalp	x	x	x				
10.0	Gives plain manicure			x				x
11.0	Applies facial lotions	x		x	x		x	
12.0	Studies facial features	x		x	x		x	
13.0	Applies make-up			x	x		x	
14.0	Arranges hair	x		x			x	
15.0	Removes hair	x		x		x	x	
16.0	Sets hair	x		x		x		
17.0	Sprays hair	x		x			x	
18.0	Designs prostheses				x		x	
19.0	Selects make-up			x	x	x	x	
20.0	Maintains treatment records	x	x	x		x		x
21.0	Follows sketch	x		x	x		x	
22.0	Makes nail repairs			x			x	x
23.0	Gives oil manicure			x				x

Figure 6a

Task Requirements

Cluster - Construction

Subclusters - Building maintenance/service;
- Residential construction

Core Task #CT01 - Use measurement and layout tools.

#	Psychomotor (Skills)	Cognitive (Knowledges)	Affective (Attitudes)
1.	demonstrate the different applications or uses of each tool	1. Identify specific layout/measuring tools: a. name b. recognize on sight c. recognize written equivalent d. define use - tape or rule - framing square - T bevel - scratch awl - steel long tape - chalk line - combination square - marking guage - plumb bob - dividers - butt gauge	1. recognize and observe safety precautions in using layout and measuring tools
2.	store layout and measuring tools	2. Interpret measuring tools accurately. a. measure building/repair materials for thickness, height and length in yards, feet and inches b. read and measure fractions to ±1/16 of an inch c. round numbers to the one/hundredth place	2. listen to and follow directions 3. work with moderate supervision

Figure 3b

Task Requirements

Cluster PERSONAL SERVICES

Subcluster BARBERING, COSMETOLOTY AND RELATED SERVICE OCCUPATIONS

Occupation #1 BARBERING Occupation #2 COSMETOLOGY

Common Task Cuts hair

Psychomotor (Skills)	Cognitive (Knowledges)	Affective (Attitudes)
1. prepares patron	1. analyze head shape	1. complies with patrons' desires
2. arranges needed supplies and equipment	2. analyze facial features	2. follows sanitary procedures
3. gives basic scissor cut	3. analyze hair texture	3. follows safety procedures
4. gives razor cut	4. describe uses of hair cutting tools:	
5. gives layer cut	- scissors - razor - thinning shears - electric clippers	
6. slithers hair	5. analyze procedures for:	
7. shingles hair	- basic cut - razor cut - layer cut - slithering - shingle cut - razor thinning - shear thinning	
8. thins hair	6. estimate fractions within ± ¼"	
	7. determine 1" and 2" lengths	
	8. determine 45° angle	
	9. identify geometric shapes	

Filmstrip Reaction Sheet

PLANNING VOCATIONAL EDUCATION FOR DISADVANTAGED OR HANDICAPPED STUDENTS: PART ONE

Directions: After viewing the sound filmstrip, complete the questions below. This activity will help organize your thoughts for future discussions. Ideas that should be included are found in the Answer Key.

1. What information should be gathered in a feasibility study for establishing a vocational program suitable for disadvantaged learners?

   a. _____

   b. _____

   c. _____

2. What are the components of a job description?

   a. _____

   b. _____

   c. _____

3. What information can be included in a task listing?

   a. _____

   b. _____

   c. _____

   d. _____

   e. _____

4. What major factors are considered in detailing tasks for disadvantaged learners?

   a. _____

   b. _____

   c. _____

   d. _____

   e. _____

Answer Key -- Filmstrip

PLANNING VOCATIONAL EDUCATION FOR DISADVANTAGED OR HANDICAPPED STUDENTS: PART ONE

1. Feasibility study information.
   a. present and future state of labor market
   b. appropriateness of jobs for disadvantaged
   c. availability of instructional resources

2. Components of a job description.
   a. general duties
   b. broad areas of responsibility
   c. conditions under which job is performed

3. Task listing information.
   a. major tasks included in the job
   b. frequency of task
   c. relative importance of each task
   d. learning difficulty of each task
   e. mandatory, entry-level tasks

4. Task detailing factors.
   a. steps involved in the task
   b. sequence of the steps
   c. criticality of the steps
   d. safety requirements
   e. language or computation skills

Test Your Knowledge

CONDUCTING AN OCCUPATIONAL CLUSTER ANALYSIS

Directions: Respond to the questions below by completing the blanks. Then compare your answers with the appropriate responses in the Answer Key.

1. Identify three reasons for teaching vocational education according to occupational clusters.

   a. _____

   b. _____

   c. _____

   _____

2. List the seven steps for conducting a cluster analysis suitable for disadvantaged learners.

   a. _____

   b. _____

   c. _____

   d. _____

   e. _____

   f. _____

   g. _____

3. What are three methods of identifying and verifiying occupations and tasks suitable for disadvantaged learners?

   a. _____

   b. _____

   c. _____

4. What are two reasons for determining a hierarchy of occupations?

   a. _____

   b. _____

5. Define task inventory.

_____

_____

6. Identify five criteria for selecting occupations suitable for disadvantaged learners.

a. _____

b. _____

c. _____

d. _____

e. _____

7. Explain why it is important to consider the employment outlook when working with disadvantaged youth.

_____

_____

_____

8. Write two task statements.

a. _____

b. _____

9. Define common tasks.

_____

_____

_____

10. Define task requirements.

_____

_____

_____

11. Identify one element for each of the following behaviors.

a. psychomotor: _____

b. cognitive: _____

c. affective: _____

Answer Key -- Test Your Knowledge

CONDUCTING AN OCCUPATIONAL CLUSTER ANALYSIS

1. Reasons for teaching occupational clusters.
   a. the common tasks learned permit entry into several related occupations
   b. prepares learner for mobility within a broad occupational area
   c. permits career exploration and occupational preparation

2. Cluster analysis steps.
   a. identify broad occupational cluster and/or subcluster(s)
   b. identify specific occupations
   c. develop an occupational hierarchy
   d. select occupations for disadvantaged learners
   e. construct and verify task inventories
   f. select core and specific instructional tasks
   g. describe the task requirements

3. Methods of identifying and verifying occupations and tasks.
   a. occupational surveys of local employers
   b. research of current occupational references (i.e., literary analysis)
   d. interviews of occupational representatives

4. Reasons for occupational hierarchy.
   a. visualize levels of occupations
   b. visualize relationships between occupations

5. A task inventory is a listing of tasks or discrete units of work that are performed by workers who are employed in a specific occupation.

6. Occupation selection criteria.
   a. develop entry level skills
   b. develop second level skills
   c. develop transferrable skills
   d. are based on job market availability
   e. have favorable employment outlook
   f. are adaptable to technological change
   g. demonstrate potential for mobility within industry/business/labor
   h. demonstrate mobility among geographic areas.

7. Consideration of employment outlook for disadvantaged learners.
   a. lower academic skills make it difficult to find jobs when laid off.
   b. jobs that are eliminated cause many disadvantaged people to become unemployed.

c. the disadvantaged persons should gain skills that can be applied to other areas.
d. the current job market may not reflect immediate future needs of labor.

8. Task statements.

   a. frame floor openings
   b. cut hair

   Each correct answer identified should start with an active verb and be followed by a noun with a possible modifier(s).

9. Common tasks are performed by workers in two or more specific occupations. These tasks become core tasks in vocational instruction.

10. Task requirements are the psychomotor, cognitive and affective behaviors a student must possess to perform a task or competency.

11. An element for each behavior.

    a. psychomotor: prepares patron
    b. cognitive: identify geometric shapes
    c. affective: follows safety procedures

    Other examples are given on Figures 6a and 6b.

Worksheet Ia

OCCUPATIONAL CLUSTER ANALYSIS INVENTORY

Directions: Select a major occupational cluster area, and divide the cluster area into two subclusters. Then identify related occupational titles for each subcluster.

Cluster_____

Subcluster #1_____	Subcluster #2_____
Occupations	Occupations

GO TO WORKSHEET Ib

Worksheet Ib

OCCUPATIONAL CLUSTER ANALYSIS INVENTORY

Directions: Select two related occupations within a subcluster from Worksheet Ia. Identify the entry level tasks that are frequently performed and important for each occupation. Then check the tasks for Occupation #2 that are common to both occupations.

Cluster_____ Subcluster_____

Occupation #1_____ Entry Level Tasks	Occupation #2_____ Entry Level Tasks	Common Tasks (✓)
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Worksheet II

TASK REQUIREMENTS

Directions: Select one task that is common to both occupations on Worksheet Ib. Then list the psychomotor, cognitive and affective requirements. Use the examples in Figures 6a and 6b as references.

Cluster_____

Subcluster_____

Occupation #1_____ Occupation #2_____

Psychomotor (Skills)	Cognitive (Knowledges)	Affective Attitudes)

Rate Your Performance

OCCUPATIONAL CLUSTER ANALYSIS CHECKLIST

Directions: Rate the criteria listed below by placing a check (✓) in the appropriate column. Worksheets Ia, Ib and II are to be rated according to this checklist. All items must receive an acceptable rating. If an item is unaccaptable, repeat any activities that are necessary to permit an acceptable rating.

Criteria	Acceptable	Unacceptable
Occupational Cluster Analysis Inventory		
1. A major cluster area is identified.	_____	_____
2. Two subclusters are identified.	_____	_____
3. The occupations are representative of each subcluster.	_____	_____
4. Two related occupations are selected from a subcluster.	_____	_____
5. The two selected occupations are suitable for disadvantaged learners.	_____	_____
6. Entry level tasks are listed for each occupation.	_____	_____
7. Each task statement contains an action verb and noun.	_____	_____
8. The tasks listed are performed frequently.	_____	_____
9. The tasks listed are important.	_____	_____
10. Common tasks are identified.	_____	_____
11. The cluster, subclusters, occupations and tasks are verified by incumbent workers, supervisors or other representatives.	_____	_____
12. The task requirements are determined for one common task.	_____	_____
13. The psychomotor requirements represent perceptual, physical and motor skills essential to the task.	_____	_____

		Acceptable	Unacceptable
14.	The cognitive requirements represent verbal, language, information and quantitative skills essential to the task.	_____	_____
15.	The affective requirements represent personal-social and attitudinal skills essential to the task.	_____	_____
16.	Task requirements are identified for entry-level employees.	_____	_____
17.	Task requirements are verified by incumbent workers, supervisors or other representatives of the task.	_____	_____

Extended Information Section I

CONDUCTING A DETAILED TASK ANALYSIS

Disadvantaged learners who have academic deficiencies may require a comprehensive analysis of certain occupational tasks. The task should be detailed until the behaviors required are described at a level in which effective learning can occur. A multilevel element inventory and a task analysis profile can be used to provide a detailed analysis of tasks.

Multilevel Element Inventory

A task can be detailed into various levels of elements. In the example shown in Figure 6, the task is analyzed to identify the elements to perform minor engine tune-up. Then the elements determined are broken down into sub-elements. These sub-elements are broken down, and the detailing process can continue until the disadvantaged learner's level has been reached. Although the example in Figure 6 is a psychomotor task, a similar process can be applied to cognitive and affective behaviors.

Task Analysis Profile

A task analysis profile is similar to the learner analysis profile discussed as part of the unit on assessment of disadvantaged learners. This profile is different in that a graphic representation is produced of employee task requirements, instead of the learner's behavioral characteristics. Either a core or specific instructional task may be analyzed.

The criteria for a task analysis profile is also similar to the criteria used for a learner analysis profile. However, one should use the criteria in relation to the behaviors required of the employees or incumbent workers who perform the occupational task being analyzed.

Worker criteria for performing a given task is in Extended Supplementary Section I. Each criterion should be rated on a five-step scale. The scale ranges from "no need" (i.e., rating of one) to "extreme need" (i.e., a rating of five). The amount of need is based on the frequency with which each element is performed and the importance of each element to success of the incumbent workers in performing the task. For example, a cosmetologist may need to measure when cutting hair as described in the section, "Criteria For Developing A Task Analysis Profile." A rating of 4 may be given to indicate an above average need for this element. When all ratings are completed, the marks can be connected to provide a profile of the employee's needs.

Each rating should be documented. Specific documentary information should be available through worker observations,

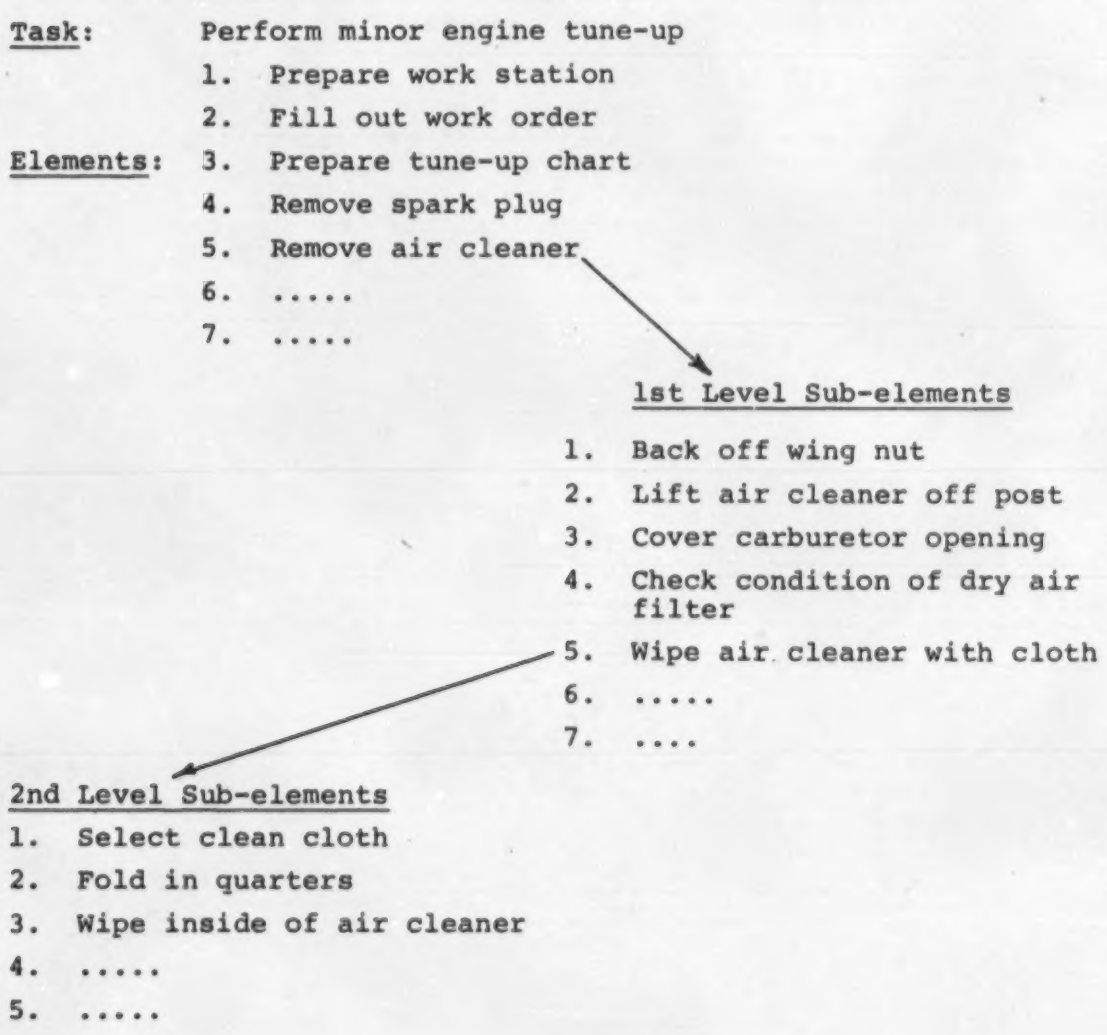
literary analysis and worker and supervisor interviews.

The documentary information should describe the specific behaviors of the workers who perform the occupational task. The specific information should be clear, concise, objective, verifiable and current. As an example, documentary information for measurement might be (a) determine 1" and 2" lengths and (b) determine 45° angle.

The "Task Analysis Profile" is an important tool for relating occupational content to a disadvantaged learner's needs. This information will be used to plan, implement and evaluate vocational instruction for the disadvantaged learner.

Figure 6

Examples of Task, Element and Sub-Element Statements



Adapted from: Herschbach, D. The relationship between job tasks and objectives. Journal of Industrial Teacher Education, 1979, 16 (2), 27-37.

Worksheet III

MULTILEVEL ELEMENT INVENTORY

Directions: Select one element for a core or specific entry level task that should be detailed at least two levels for a disadvantaged learner. Identify the 1st level sub-elements for the element chosen. Then select one of the 1st level sub-elements identified and specify the 2nd level sub-elements. You may use the examples in Figure 6 as a guide.

Entry Level Task: _____

Element _____ 1st Level Sub-elements	1st Level Sub-element _____ 2nd Level Sub-elements
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Extended Supplementary Section I

CRITERIA FOR DEVELOPING A TASK ANALYSIS PROFILE
Elements and Definitions

Cognitive Behavior

Area 1 - Verbal Skills		Area 2 - Language Skills	
Reading	Reads with comprehension at the 5th grade level or above	Listening	Listens attentively and for the purpose of remembering when others are talking
Spelling	Spells common words accurately	Grammar	Uses appropriate grammatical expressions in sentence form
Recording Information	Maintains accurate records of performance or production	Technical Vocabulary	Recognizes and comprehends technical vocabulary words at a level sufficient for educational and social communication
Verbal Communication	Uses words effectively when asking or responding to questions	Nonverbal expression	Reacts to voice tone, inflection, facial expression, choice of words, and gestures; and recognizes emotions and feelings
Written Communication	Writes a series of sentences on a given subject	Generalizing	Draws conclusions, makes accurate assumptions from receptive language
Match and Differentiate	Discriminates accurately between items which are similar and dissimilar	Classification	Classifies meaningful language symbols, e.g. principal and bosses are authorities
Form Completion	Provides complete information on common forms, e.g., social security		
Telephone Communication	Uses the telephone to obtain information		
Accuracy	Checks, when necessary, to be sure that task was performed accurately		

Adapted from: Hemenway, R., et al, Learner-behavior-task rating scale. Illinois State University, 1975; Phelps, L.A. Instructional development for special needs learners: an inservice resource guide. Urbana: University of Illinois, 1975; Reynolds, M.L., et al., Task-related competencies. Central Michigan University, 1974; and U.S. Department of Labor. Dictionary of occupational titles (3rd ed.). Washington, D.C.: Government Printing Office, 1965.

Area 3 - Informational Skills

Retention	Remembers critical information such as names, locations and procedures
Sequencing	Processes information accurately for determining an appropriate order or sequence for objects
Attentiveness	Concentrates on a task and is not easily distracted
Planning Ability	Plans ahead for completion of a task
Organization	Approaches problems in a systematic manner
Decision Making	Selects from among alternatives independently
Follow Verbal Instructions	Understands spoken instructions containing more than one idea
Follow Written Instructions	Reads and follows written instructions as communicated by signs, safety labels and procedure manuals
Mechanical Aptitude	Demonstrates a working knowledge of mechanical principles, e.g. levers, inertia and motion
Perseverence	Sees the task through to completion
Transfer	Applies information gained from previously learned skills to a new task

Area 4 - Quantitative/Numerical Skills

Counting and Recording	Reads, counts, and/or records numerical information accurately
Cardinal Numbers	Reads, interprets, and writes cardinal numbers up to four digits
Ordinal Numbers	Reads, interprets, and writes ordinal numbers up to four digits
Addition/Subtraction	Performs simple addition and subtraction computations accurately
Multiplication/Division	Performs simple multiplication and division computations accurately
Measurement	Performs or interprets the following measurements correctly and accurately: distance/size, weight/volume/balance, liquids/solids, time, temperature/pressure/humidity, torque, electrical units, vertical/horizontal, and degrees of a circle (angularity)

Cognitive Behavior Con't

Quantitative Skills Con't

General Numerical Usage	Recognizes and affixes meaning to zip codes, social security numbers, street addresses, etc.	Roman Numerals	Reads, interprets and writes common Roman numerals
Fraction	Reads, interprets and uses common fractions, e.g. 1/3, 1/4 and 1/2	Approximations	Estimates and judges distances, height, weight or size accurately
Money	Recognizes common denominations of coins and bills and can make change accurately	Configuration	Discriminates differences in shape, form, texture and size

Psychomotor Behavior

Area 5 - Perceptual Skills

Auditory Discrimination	Makes fine distinction from sound cues and recognizes normal and abnormal sounds	Color Perception	Recognizes primary colors, sees differences and similarities between shades
Form Perception	Sees details of objects, graphs, pictures and can compare difference in size and shape	Touch Discrimination	Determines size, shape, temperature, moisture content or texture by means of touch
Form Discrimination	Recognizes differences between a variety of forms (two dimensional), solid shapes, sizes and textures	Perceptual Information	Obtains information through sight, shape, size, distance, motion, color and other unique characteristics
Space Perception	Recognizes forms and objects in their spatial relationships accurately	Olfactory Discrimination	Differentiates a variety of smells

Psychomotor Behavior Con't

Area 6 - Physical Skills

Physical Strength (check appropriate level)	Uses physical strength to lift, carry, push or pull objects in a variety of work situations: 1. Sedentary work (mostly sitting and required to lift a maximum of 10 pounds) 2. Light work (considerable standing or walking or work movements while sitting and required to lift up to 20 pounds) 3. Medium work (many work movements while sitting and required to lift up to 50 pounds) 4. Heavy work (required to lift up to 100 pounds and/or carry up to 80 pounds) 5. Very heavy work (required to lift over 100 pounds)
Hand-eye Coordination	Coordinates movements of eyes and hands, and fingers rapidly and accurately
Eye-hand-foot Coordination	Coordinates feet and hands in response to visual or auditory cues.
Bi-manual Coordination	Coordinates the use of both hands efficiently
Manual Dexterity	Moves and coordinates hands with skill and ease in placing and turning motions; uses common hand tools
Reaching, Grasping	Reaches and grasps objects adequately using upper extremities
Finger Dexterity	Manipulates small objects with fingers rapidly and accurately
Mobility	Walks or moves to appropriate locations with little or no problem
Equilibrium	Maintains body equilibrium to prevent falling or stumbling when walking, standing, running or crouching
Kneeling, Climbing, Crawling	Demonstrates good use of lower extremities and body muscles in body movement

Affective Behavior

Area 7 - Social Habits

Social Acceptance	Likes and is sought out by peers
Sociability	Participates actively in group activities; seeks out friends
Sensitivity	Expresses feelings of warmth toward others; is sensitive to feelings and needs of others
Punctuality	Is on time regularly for activities and events; accepts responsibility for tardiness
Social Invisibility	Blends in with groups and activities smoothly; exhibits behavior appropriate to the circumstances
Cooperativeness	Cooperates with peers and others for the accomplishment of a group task
Appropriate Behavior	Exhibits suitable gestures, verbalizations, actions, mannerisms etc.
Character	Considered dependable by peers and others

Social Habits Con't

Self-initiation	Initiates work on task promptly and without the urging of others
Responsibility	Assumes and carries out tasks in a dependable manner
Attentiveness	Listens to directions; follows instructions; attends to task as required
Conformity	Accepts rules and regulations whether or not he/she agrees with them
Seeks Help	Requests assistance from others and/or peers when encountering difficulty
Distractibility	Stays on task when others are nearby or after experiencing non-work related problems
Loyalty	Never or rarely complains about peers, teachers, others, or tasks
Appearance	Dresses appropriate to the situation; well groomed
Absence of supervision	Works at a consistent rate when unsupervised; works well without direct, continuous supervision
Safety	Demonstrates a concern for and takes appropriate action to maintain safe conditions

Worksheet IV

TASK ANALYSIS PROFILE

Directions: Read the definition for each behavior criterion in Supplementary Section I, Criteria for Developing a Task Analysis Profile. Then rate the criterion on the profile by placing a dot in the appropriate box. The rating scale ranges from 1-5, indicating the amount of need for each criterion. The amount of need should be based on the frequency with which the task is performed and the importance of the task to the success of entry level workers. When all areas have been rated, connect the dots with a solid line to provide a graphic representation of the worker's behavior needs. As you are rating each criterion, briefly record the specific behavior needed.

1 = no need
2 = below average need
3 = moderate need
4 = above average need
5 = extreme need

Rater's Name_____ Date of Profile_____

Name of School_____ Program_____

Task _____ Names of Task Representatives (e.g., incumbent workers, supervisors etc.)

_____
Name Title

_____
Name Title

_____
Name Title

_____
Name Title

TASK ANALYSIS PROFILE

Criteria	No Need		Moderate Need		Extreme Need	Specific Behavior Needed
	1	2	3	4	5	
Cognitive Behavior						
Verbal Skills						
Read						
Spell						
Record information						
Verbal communication						
Written communication						
Other verbal skills						
Language Skills						
Listening						
Grammatical expression						
Technical vocabulary						
Nonverbal expression						
Other language skills						
Informational Skills						
Retention						
Sequence						
Attentiveness						
Planning ability						
Mechanical aptitude						
Transfer						
Other informational skills						
Quantitative/Numerical Skills						
Count and Record						
Add/subtract						
Multiply/divide						
Measure						
General number use						
Money						
Other quantitative/numerical skill						

Criteria	No Need		Moderate Need		Extreme Need	Specific Behavior Needed
	1	2	3	4	5	
Psychomotor Behavior						
Perceptual Skills						
Auditory discrimination						
Form perception						
Form discrimination						
Space perception						
Color perception						
Touch discrimination						
Other perceptual Skills						
Physical Skills						
Physical strength						
Hand-eye coordination						
Manual dexterity						
Mobility						
Other physical skills						
Affective Behavior						
Social Habits						
Sociability						
Sensitivity						
Cooperativeness						
Responsibility						
Conformity						
Loyalty						
Safety						
Other social habits						

Rate Your Performance

DETAILED TASK ANALYSIS CHECKLIST

Directions: Rate the criteria listed below by placing a check (✓) in the appropriate column. Worksheets III and IV are to be rated according to this checklist. All items must receive an acceptable rating If an item is unacceptable, repeat any activities that are necessary to permit an acceptable rating.

Criteria	Acceptable	Unacceptable
Multilevel Task Detailing		
1. One element for an entry level task is identified.	_____	_____
2. Each 1st level sub-element is part of the procedure for performing the element.	_____	_____
3. Each 2nd level sub-element is part of the procedure for performing one 1st level sub-element.	_____	_____
Task Analysis Profile		
4. All rater information is identified.	_____	_____
5. One core or specific instructional task is identified.	_____	_____
6. Verbal, language, informational and quantitative/numerical skills of workers performing the task are rated.	_____	_____
7. Perceptual and physical skills of workers performing the task are rated.	_____	_____
8. Social habits of workers performing the task are rated.	_____	_____
9. Specific behaviors are identified for each criterion given a rating of 2, 3, 4 or 5.	_____	_____

10. Specific behaviors identified are needed by entry-level employees. _____ _____

11. Specific behaviors are clear, concise, objective and current. _____ _____

12. Specific behaviors are verified by incumbent workers, supervisors or other expert representatives of the task. _____ _____